

Table 7 gp120

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(39-51)	gp120(31-43)	EQLWVTVYYGVPV	peptide	murine(H-2 ^{b_{xk}})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(45-55)	gp120(37-47)	VYYGVPVWKEA	peptide	murine(H-2 ^{b_{xk,sxd}})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(48-61)	gp120(40-53)	GVPVWKEATTLC	peptide	murine(H-2 ^{sxd})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(72-82)	gp120(64-74)	AHKVWATHACV	peptide	murine(H-2 ^{b_{xk,sxd}})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(74-85 LAI)	gp120(66-77)	NVWATHACVPTD ?	HIV infection	human	[Schrier et al.(1989)]
		• Stimulates T-cell proliferation in HIV-infected donors			
gp120(81-92)	gp120(73-84)	CVPTNPVPQEVV	peptide	murine(H-2 ^{b_{xk,sxd}})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(108-119 LAI)	gp120(100-111)	VEQMHEIDIISLW ?	HIV infection	human	[Schrier et al.(1989)]
		• Stimulates T-cell proliferation in HIV-infected donors			
gp120(109-121)	gp120(101-113)	EQMHEDIISLWDQ	peptide	murine(H-2 ^{b_{xk}})	[Sastry & Arlinghaus(1991)]
			• Peptides induced T-cell proliferative response to immunizing peptide and to gp160		
gp120(109-123 IIIB)	gp120(101-115)	EQMHEDIISLWDQSL	IIIB gp160	murine(H-2 ^{d,i₅})	[Hale et al.(1989)]
		• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types			
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	IIIB gp160	murine(H-2 ^k)	[Hale et al.(1989)]
		• Epitope T2: Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types			
gp120(112-124 BH10)	gp120(104-116)	HEDIISLWDQSLK	env fragment	murine(H-2 ^{k,s})	[Cease et al.(1987)]
		• Epitope T2: 1 of 2 functional epitopes identified using an amphipathic helix epitope prediction algorithm			
gp120(112-124 BH10)	gp120(104-116)	HEDIISLWDQSLK	gp160 (IIIB) vaccinia	human	[Berzofsky et al.(1988)]
		• Epitope T2: Proliferative response to T1 and T2 peptides in 14 immunized, uninfected humans			
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	HIV infection	human	[Clerici et al.(1989)]
		• Epitope T2: IL-2 production detection of T-helper lymphocytes from asymptomatic HIV-positive individuals			

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	HIV infection	human	[Clerici et al.(1991a)]
		• Epitope T2: Peptides stimulate Th cell function and CTL activity in similar patient populations			
gp120(112-124)	gp120(104-116)	HEDIISLWDQSLK	rgp160	human	[Clerici et al.(1991b)]
		• Epitope T2: Immunizing uninfected individuals with rgp160 results in stronger Th response than does natural infection			
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	HIV exposure	human	[Clerici et al.(1992)]
		• Epitope T2: Cell-mediated immune response to HIV-1 peptides in HIV-1 exposed seronegative men			
gp120(112-124 IIIB)	gp120(104-116)	HEDIISLWDQSLK	peptide priming gp160 boost	rhesus monkeys	[Hosmalin et al.(1991)]
		• Epitope T2: Peptide priming to induce T-cell help enhances antibody response to gp160 immunization			
gp120(112-124 IIIB)	gp120(103-116)	HEDIISLWDQSLK	HIV exposure	human	[Pinto et al.(1995)]
		• Epitope T2: CTL activity analyzed in parallel with T helper reactivity in exposed but uninfected health care workers			
gp120(115-126 LAI)	gp120(107-118)	IISLWDQSLKPC ?	HIV infection	human	[Schrier et al.(1989)]
		• Stimulates T-cell proliferation in HIV-infected donors			
gp120(204-216)	gp120(203-215)	SVITQACSKVSFE	peptide	murine(H-2 ^{b₂k,sxd})	[Sastry & Arlinghaus(1991)]
		• Peptides induced T-cell proliferative response in mice representing four haplotypes			
gp120(215-228)	gp120(214-227)	FEPPIPIHYCAFPGF	peptide	murine(H-2 ^{b₂k})	[Sastry & Arlinghaus(1991)]
		• Peptides induced T-cell proliferative response to immunizing peptide and to gp160			
gp120(IIIB)	gp120(224-239)	PAGFAILKCNNKTFNY	Peptide priming, <i>in vitro</i>	human(DR2)	[Manca et al.(1995)]
		• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>			
		• gp120 priming induced T-cells that recognize this peptide			
gp120(225-240 SF2)	gp120(224-238)	PAGFAILKCNNKTFN	Peptide, <i>in vitro</i> ?		[Manca et al.(1993)]
		• T-cell line derived from un-primed, uninfected individual			
		• Responds to APC pulsed with either synthetic peptide or gp120			
		• Human MAbs 448-D and 450-D enhance APC gp120 uptake and presentation			
gp120(233-244 LAI)	gp120(225-236)	AGFAILKCNNKKT ?	HIV infection	human	[Schrier et al.(1989)]
		• Stimulates T-cell proliferation in HIV-infected donors			
gp120(IIIB)	gp120(234-249)	NKTFNGKGPCTNVSTY	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
		• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>			
gp120(IIIB)	gp120(244-258)	TNVSTVQCTHGRPIY	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
		• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>			

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(IIIB)	gp120(254-269)	GIRPIVSTQLLLNGSC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(269-283 IIIB B10)	gp120(273-287)	EVVIRSANFTDNAKT	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(IIIB)	gp120(273-289)	VVIRSDNFTNNAKTIC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(274-288 IIIB B10)	gp120(278-292)	SANFTDNAKTIIVQL	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(IIIB)	gp120(284-299)	NAKTIIVQLNESVAIC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(IIIB)	gp120(324-339)	RIIGDIRKAHCNISRY	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(296-312 LAI)	gp120(288-297)	IIVQLNQSVE ?	HIV infection	human	[Schrier et al.(1989)]
			• Stimulates T-cell proliferation in HIV-infected donors		
gp120(292-300 SF2)	gp120(293-301)	NESVAINCT	env 2-3, SF2 gp120	human	[Botarelli et al.(1991)]
			• A non-glycosylated form of gp120 was used as an immunogen; 20% of T-cell clones do not recognize the glycosylated form		
gp120(MN)	gp120(294-299)	ESVQIN	immunization	murine	[Veronese et al.(1994)]
			• In a filamentous bacteriophage coat protein background, stimulated Ab production to the V3 loop tip		
gp120(303-321 IIIB)	gp120(300-316)	CTRPNNNTRKSIRIQR-GPG(Y)	polyvalent peptide	goat(?)	[Palker et al.(1989)]
			• Goats were immunized with peptides containing V3 type-specific neutralizing determinants coupled to T1		
gp120(307-322 IIIB)	gp120(306-317)	NTRKSIRIQRGPGR	peptide	murine	[Goodman-Snitkoff et al.(1990)]
			• Identification of putative Th epitopes that can stimulate an antibody response in peptide-immunized mice		
gp120(309-323 IIIB B10)	gp120(311-325)	EQRGPGRAFVTIGKI	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	vaccinia IIIB gp160	murine(H-2 A ^d)	[Takahashi et al.(1990)]
			• Epitope P18: Induces both class II restricted CD4+ Th cells, and class I restricted CD8+ CTL		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK		murine(H-2 I-A ^d)	[Takeshita et al.(1995)]
			• Epitope P18: Binds Class II H-2 I-A ^d requiring riqrgPgRaFvti, and Class I H-2 D ^d , requiring iGPgRaFvtI		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV infection	human(DR)	[Baier et al.(1995)]
			• Epitope P18: Linked HIV-1 T1 and P18 peptides to anti-HLA-DR and Ig D Fab fragments		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV exposure	human(?)	[Pinto et al.(1995)]
			• Epitope P18: CTL activity analyzed in parallel with T helper reactivity in exposed		
gp120(315-329 MN)	gp120(310-324)	RIHIGPGRAFYTTKN	HIV exposure	human	[Pinto et al.(1995)]
			• Epitope P18: CTL activity analyzed in parallel with T helper reactivity in exposed		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV infection	human	[Clerici et al.(1989)]
			• Epitope P18: IL-2 production detection of T-helper lymphocytes from asymptomatic HIV-positive individuals		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV infection	human	[Clerici et al.(1991a)]
			• Epitope P18: Peptides stimulate Th cell function and CTL activity in similar patient populations		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	rgp160	human	[Clerici et al.(1991b)]
			• Epitope P18: Immunizing uninfected individuals with rgp160 results in stronger Th response than does natural infection		
gp120(315-329 IIIB)	gp120(310-324)	RIQRGPGRAFVTIGK	HIV exposure	human	[Clerici et al.(1992)]
			• Epitope P18: Cell-mediated immune response to HIV-1 peptides in HIV-1 exposed seronegative men		
gp120(MN)	gp120(310-324)	RIHIGPGRAFYTTKN	HIV exposure	human	[Clerici et al.(1992)]
			• Epitope P18 MN: Cell-mediated immune response to HIV-1 peptides in HIV-1 exposed seronegative men		
gp120(MN)	gp120(310-323)	RIHIGPGRAFYTTK	peptide	murine(H-2 ^d)	[Klinman et al.(1995)]
			• Epitope SP10: Hybrid T1-V3 peptide activates IL-4 and IL-6 in a dose dependant manner		
			• 10-mer from V3 contributes to this response		
gp120(314-328 IIIB B10)	gp120(316-331)	GRAFVTIGKIGNMRQ	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(324-338 IIIB)	gp120(319-334)	FVTIGKIGNMRQAHC	IIIB gp160	murine(H-2 ^{k,d})	[Hale et al.(1989)]
			• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types		
gp120(327-341 HXB2)	gp120(330-344)	RQAHCNISRAKWNNNT	rec HXB2 gp120	murine(I-A ^d)	[Warren & Thomas(1992)]
			• Murine T-cell clone; MHC restriction determined, minimum epitope defined, N terminal flank of the V3 loop.		

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(IIIB)	gp120(334-348)	CNISRAQWNNTLEQI	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(342-356 IIIB)	gp120(338-352)	RAKWNNTLQKQICSKL	IIIB gp160	murine(H-2 ^{k,t4,i5})	[Hale et al.(1989)]
			• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types		
gp120(IIIB)	gp120(344-359)	TLEQIVKKLREQFGNC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(346-359)	gp120(347-360)	QIVKKLREQFGNNK	HIV infection	human	[Krowka et al.(1990)]
			• Conjugation of HIV peptides to liposomes and rIL-2 stimulation may enhance cell-mediated responses		
gp120(IIIB)	gp120(344-359)	TLEQIVKKLREQFGNC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(364-378 IIIB B10)	gp120(268-382)	SSGGKPEIVTHSFNC	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(368-377 LAI)	gp120(360-369)	NKTIIFKQSS ?	HIV infection	human	[Schrier et al.(1989)]
			• Stimulates T-cell proliferation HIV-infected donors		
gp120(369-383 IIIB B10)	gp120(373-387)	PEIVTHSFNCGGEFF	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(IIIB)	gp120(385-399)	EFFYCNTTQLFNNTW	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(IIIB)	gp120(395-410)	FNNTWRLNHTEGTKGC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(394-408 IIIB B10)	gp120(398-412)	TWFNSTWSTKGSNNT	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(399-413 IIIB B10)	gp120(398-412)	TWSTKGSNNTEGSDT	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(410-429 PV22)	gp120(410-430)	GSDTITLPCRIKQFIN-MWQE	HIV infection	human(DR4)	[Callahan et al.(1990)]
			• Synthetic peptides representing natural variants were used to test for recognition in the context DR4		
gp120(410-429 PV22)	gp120(410-430)	GSDTITLPCRIKQFIN-MWQE	HIV infection	human(DR4(Dw10))	[Polydefkis et al.(1990)]
			• Human CD4+ T-cell clones lyse recombinant vaccinia virus-infected cells that synthesize envelope gp160		
gp120(IIIB)	gp120(417-432)	LPCRIKQIINMWQEVEVY	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
			• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>		
gp120(424-438 IIIB B10)	gp120(425-439)	INMWQEVGKAMYAPP	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
			• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses		
gp120(428-443 IIIB B10)	gp120(422-437)	KQIINMWQEVGKAMYA	env fragment	murine(H-2 ^{k,d,s})	[Cease et al.(1987)]
			• Epitope T1: 1 of 2 functional epitopes identified using an amphipathic helix epitope prediction algorithm		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	gp160 (IIIB) vaccinia	human	[Berzofsky et al.(1988)]
			• Epitope T1: Proliferative response to T1 and T2 peptides in 14 immunized, uninfected humans		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	polyvalent peptide	goat(?)	[Palker et al.(1989)]
			• Epitope T1: Goats immunized with peptides containing V3 type-specific neutralizing determinants coupled to T1		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	HIV infection	human	[Clerici et al.(1989)]
			• Epitope T1: IL-2 production detection of T-helper lymphocytes from asymptomatic HIV-positive individuals		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	IIIB gp160	murine(H-2 ^{k,d,t4})	[Hale et al.(1989)]
			• Epitope T1: Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	HIV infection	human	[Clerici et al.(1991a)]
			• Epitope T1: Peptides stimulate Th cell function and CTL activity in similar patient populations		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	rgp160	human	[Clerici et al.(1991b)]
			• Epitope T1: Immunizing uninfected individuals with rgp160 results in stronger Th response than does natural infection		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	HIV exposure	human	[Clerici et al.(1992)]
			• Epitope T1: Cell-mediated immune response to HIV-1 peptides in HIV-1 exposed seronegative men		
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	immunization	murine	[Veronese et al.(1994)]
			• Epitope T1: Engineered into a filamentous bacteriophage coat protein, stimulated for Ab production to the V3 loop		

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	peptide	chimpanzees	[Haynes et al.(1993)]
	• Epitope T1: Hybrid T1-V3 peptide immunogenicity reduced when the fusogenic domain of gp41 was added				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	peptide	murine(H-2 ^d)	[Klinman et al.(1995)]
	• Epitope T1: Hybrid T1-V3 peptide activates IL-4 and IL-6 in a dose dependent manner				
gp120(428-451 IIIB)	gp120(422-445)	KQIIMNWQEVGKAMYA- PPISGQIR	peptide	murine(H2 ^d)	[Shirai et al.(1996)]
	• Linked to a CTL epitope from hepatitis C virus, induced CD4+ helper cells producing IL-2				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	HIV exposure	human	[Pinto et al.(1995)]
	• Epitope T1: CTL activity analyzed in parallel with T helper reactivity in exposed				
gp120(428-443 IIIB)	gp120(422-437)	KQIINMWQEVGKAMYA	HIV infection	human(DR)	[Baier et al.(1995)]
	• Linked HIV-1 T1 and P18 peptides to anti-HLA-DR and anti-IgD Fab fragments				
gp120(432-446 IIIB)	gp120(426-440)	NMWQEVGKAMYAPPI	IIIB gp160	murine(H-2 ^{t4})	[Hale et al.(1989)]
	• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types				
gp120(IIIB)	gp120(427-442)	MWQEVGKAMYAPPIC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
	• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>				
gp120(437-451 IIIB)	gp120(431-445)	VGKAMYAPPISGQIR	IIIB gp160	murine(H-2 ^{k,d,i5,t4})	[Hale et al.(1989)]
	• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types				
gp120(IIIB)	gp120(437-452)	APPIGGQISCSSNITY	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
	• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>				
gp120(IIIB)	gp120(447-462)	SSNITGLLLTRDGTC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
	• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>				
gp120(IIIB)	gp120(457-472)	RDGGTNVTNDTEVFRC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
	• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>				
gp120(459-473 IIIB B10)	gp120(460-475)	GNSNNESEIFRPGGG	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
	• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses				
gp120(466-481)	gp120(470-485)	FRPGGGDMRDNRSEL	HIV infection	human	[Krowka et al.(1990)]
	• Conjugation of HIV peptides to liposomes and rIL-2 stimulation may enhance cell-mediated responses				
gp120(474-488 IIIB B10)	gp120(476-490)	DMRDNRSELKYKV	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
	• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses				

HIV Helper T-cell Epitopes

Location	WEAU	Sequence	Immunogen	Species(HLA)	References
gp120(483-497 IIIB)	gp120(478-492)	RDNWRSELYKYKVVK	IIIB gp160	murine(H-2 ^{d,t4})	[Hale et al.(1989)]
		• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types			
gp120(C492-506 IIIB)	gp120(486-501)	CKYKVVKIEPLGVAPT	IIIB gp160	murine(H-2 ^{d,k,t4,i5})	[Hale et al.(1989)]
		• Six multideterminant helper T-cell regions are recognized by mice of three or four MHC types			
gp120(484-498 IIIB B10)	gp120(486-500)	YKYKVVKIEPLGVAP	HIV infection	human	[Wahren et al.(1989b), Wahren et al.(1989a)]
		• 12 gag and 18 env T-cell sites were identified that could commonly evoke T-cell responses			
gp120(IIIB)	gp120(487-502)	KYKVIKIEPLGIAPTC	Peptide priming <i>in vitro</i>	human	[Manca et al.(1995)]
		• Peptide stimulation of PBMC from non-infected individuals <i>in vitro</i>			
gp120(494-518 IIIB)	gp120(489-51)	KVVKIEPLGVAPTKAK- RRVVQREKRC	peptide	murine	[Goodman-Snitkoff et al.(1990)]
		• Identification of putative Th epitopes that can stimulate an antibody response in peptide immunized mice			